What is claimed is:

1. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees,

a number of said magnetic poles is 2m and a number of said slots is 3n (m and n are integers).

2. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein a first portion of said core is displaced from a second portion of said core by an angle equal to 1/4 of a basic cogging torque cycle of said motor

a number of said magnetic poles is 2m and a number of said slots is 6n (m and n are integers).

3. The core as described in claim 2 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3,

said core is configured so that opening angles of salient pole tips of said core are constant at electrical angle γ ranging from 145° to 160° ((γ/m)° in mechanical angle), and

said core is configured so that the salient pole tips on a half side of said core are displaced clockwise by an angle equal to one-eighth the cycle of the basic

cogging torque ((45/k)°in mechanical angle, where k is the least common multiple of 2m and 6n), and the salient pole tips on the other half side are displaced counterclockwise by the same angle.

4. The core as described in claim 2 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3,

said core is configured so that opening angles of salient pole tips of said core are constant at an electrical angle δ ranging from 205°to 220° ((δ/m)°in mechanical angle), and

said core is configured so that the salient pole tips on a half side of said core are displaced clockwise by an angle equal to one-eighth the cycle of the basic cogging torque ((45/k)°in mechanical angle, where k is the least common multiple of 2m and 6n), and the salient pole tips on the other half side are displaced counterclockwise by the same angle.

5. The core as described in claim 2 wherein

said core is configured so that opening angles of slots of said core are constant at an electrical angle α ranging from 80°to 95° ((α/m)°in mechanical angle), and

said core is configured so that the slots on a half side of said core are displaced clockwise by an angle equal to one-eighth the cycle of the basic cogging torque ((45/k)°in mechanical angle, where k is the least common multiple of 2m and 6n), and the slots on the other half side are displaced counterclockwise by the same angle.

6. The core as described in claim 2 wherein

said core is configured so that opening angles of slots of said core are constant at an electrical angle β ranging from 20°to 35° ((β/m)°in mechanical angle), and

said core is configured so that the slots on a half side of said core are displaced clockwise by an angle equal to one-eighth the cycle of the basic cogging torque ((45/k)°in mechanical angle, where k is the least common multiple of 2m and 6n), and the slots on the other half side are displaced counterclockwise by the same angle.

7. The core as described in claim 2 wherein

said core is configured so that slots of said core are disposed with an equal angular pitch, and slots each having an opening angle equal to an electrical angle α (80°to 95°) – one-quarter the cycle of the basic cogging torque ((α/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 6n) and slots each having an opening angle equal to the electrical angle α (80°to 95°) + one-quarter the cycle of the basic cogging torque ((α/m+90/k)°in mechanical angle) are alternately provided.

8. The core as described in claim 2 wherein

said core is configured so that slots of said core are disposed with an equal angular pitch, and slots each having an opening angle equal to an electrical angle β (20°to 35°) – one-quarter the cycle of the basic cogging torque ((β/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 6n) and slots each having an opening angle equal to the electrical angle β (20°to 35°) + one-quarter the cycle of the basic cogging torque ((β/m+90/k)°in mechanical angle) are alternately provided.

9. The core as described in claim 2 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3, and

said core is configured so that salient pole tips of said core are disposed with an equal angular pitch, and salient poles each having an opening angle equal to an electrical angle γ (145°to 160°) – one-quarter the cycle of the basic cogging torque ((γ/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 6n) and salient poles each having an opening angle equal to the electrical angle γ (145°to 160°) + one-quarter the cycle of the basic cogging torque ((γ/m+90/k)°in mechanical angle) are alternately provided.

10. The core as described in claim 2 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3, and

said core is configured so that salient pole tips of said core are disposed with an equal angular pitch, and salient poles each having an opening angle equal to an electrical angle δ (205°to 220°) – one-quarter the cycle of the basic cogging torque ((δ/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 6n) and salient poles each having an opening angle equal to the electrical angle δ (205°to 220°) + one-quarter the cycle of the basic cogging torque ((δ/m+90/k)°in

mechanical angle) are alternately provided.

11. The core as described in claim 2 wherein

a ratio said number of magnetic poles to said number of slots is 4:3, and

said core is configured so that salient pole tips of said core are disposed with an equal angular pitch, and salient poles on a half side of said core have an opening angle equal to an electrical angle γ (145°to 160°) – one-quarter the cycle of the basic cogging torque ($(\gamma/m-90/k)^{\circ}$in mechanical angle, where k is the least common multiple of 2m and 6n) and salient poles on the other half have an opening angle equal to the electrical angle γ (145°to 160°) + one-quarter the cycle of the basic cogging torque ($(\gamma/m+90/k)^{\circ}$in mechanical angle).

12. The core as described in claim 2 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3, and

said core is configured so that salient pole tips of said core are disposed with an equal angular pitch, and salient poles on a half side of said core have an opening angle equal to an electrical angle δ (205°to 220°) – one-quarter the cycle of the basic cogging torque ($(\delta/m-90/k)^{\circ}$in mechanical angle, where k is the least common multiple of 2m and 6n) and salient poles on the other half have an opening angle equal to the electrical angle δ (205°to 220°) + one-quarter the cycle of the basic cogging torque ($(\delta/m+90/k)^{\circ}$in mechanical angle).

13. The core as described in claim 2 wherein

said core is configured so that slots of said core are disposed with an equal angular pitch, and slots on a half side of said core have an opening angle equal to an electrical angle α (80°to 95°) – one-quarter the cycle of the basic cogging torque ($(\alpha/m-90/k)^{\circ}$in mechanical angle, where k is the least common multiple of 2m and 6n) and slots on the other half have an opening angle equal to the electrical angle α (80°to 95°) + one-quarter the cycle of the basic cogging torque ($(\alpha/m+90/k)^{\circ}$in mechanical angle).

14. The core as described in claim 2 wherein

said core is configured so that slots of said core are disposed with an equal angular pitch, and slots on a half side of said core have an opening angle equal to an electrical angle β (20°to 35°) – one-quarter the cycle of the basic cogging torque

$((\beta/m-90/k)^\circ$in mechanical angle, where k is the least common multiple of 2m and 6n) and slots on the other half have an opening angle equal to the electrical angle β ($20^\circ$to 35°) + one-quarter the cycle of the basic cogging torque $((\beta/m+90/k)^\circ$in mechanical angle).

15. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein a first portion of said core is displaced from a second portion of said core by an angle equal to 1/6 of a basic cogging torque cycle of said motor

a number of said magnetic poles is 2m and a number of said slots is 3n (m and n are integers).

16. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

a number of said magnetic poles is 2m and a number of said slot is 3n (m and n are integers, m is greater than or equal to 4)

wherein said core is configured by combining P core shapes each having their respective slots displaced by an angle equal to one-2P-th the cycle of basic cogging torque $((180/n\cdot k)^\circ$in mechanical angle, where k is a least common multiple of 2m and 3n).

17. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

a number of said magnetic poles is 2m and a number of said slot is 3n (m and n are integers)

wherein said core is configured by making coplanar and axial combinations of two core shapes each having the slots displaced by an angle equal to one-quarter the cycle of basic cogging torque ((90/k)°in mechanical angle, where k is a least common multiple of 2m and 3n).

18. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction, and is configured so that the opening angles of slots are constant at an electrical angle α ranging from 80°to 95° ((α/m)°in mechanical angle), and salient pole tips in an upper half are displaced clockwise by an angle equal to one-eighth the cycle of the basic cogging torque ((45/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and salient pole tips in a lower half are displaced counterclockwise by the same angle.

19. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction, and is configured so that the opening angles of slots of said core are constant at an electrical angle βranging from 20°to 35° ((β/m)°in mechanical angle), and salient pole tips in a upper half are displaced clockwise by an angle equal to one-eighth the cycle of the basic cogging torque ((45/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and salient pole tips in a lower half are displaced counterclockwise by the same angle.

20. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that slots of said half are disposed with an equal angular pitch, and slots each having an opening angle equal to an

electrical angle α (80°to 95°) – one-quarter the cycle of the basic cogging torque ((α/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and slots each having an opening angle equal to the electrical angle α (85°to 95°) + one-quarter the cycle of the basic cogging torque ((α/m+90/k)°in mechanical angle) are alternately provided, and

a lower half of said core is configured as a laterally inverted upper half.

21. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that slots of said half are disposed with an equal angular pitch, and slots each having an opening angle equal to an electrical angle β (20°to 35°) – one-quarter the cycle of the basic cogging torque ((β/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and slots each having an opening angle equal to the electrical angle β (25°to 35°) + one-quarter the cycle of the basic cogging torque ((β/m+90/k)°in mechanical angle) are alternately provided, and

a lower half of said core is configured as a laterally inverted the upper half.

22. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that opening angles of slots of said half are constant at an electrical angle α ranging from 80°to 95° ((α/m)°in mechanical angle), and slots disposed with an angular pitch equal to a quotient of 360°divided by the number of the slots + one-quarter the cycle of the basic cogging torque ((120/m + 90/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and slots disposed with an angular pitch equal to the quotient of 360°divided by the number of the slots - one-quarter the cycle of the basic cogging torque ((120/m - 90/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) are alternately provided, and

the lower half of said core is configured as a vertically inverted upper half.

23. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that opening angles of slots of said half are constant at an electrical angle β ranging from 20°to 35° $((\beta/m)^\circ$in mechanical angle), and slots disposed with an angular pitch equal to a quotient of 360°divided by the number of the slots + one-quarter the cycle of the basic cogging torque $((120/m + 90/k)^\circ$in mechanical angle, where k is the least common multiple of 2m and 3n) and slots disposed with an angular pitch equal to the quotient of 360°divided by the number of the slots - one-quarter the cycle of the basic cogging torque $((120/m - 90/k)^\circ$in mechanical angle, where k is the least common multiple of 2m and 3n) are alternately provided, and

a lower half of said core is configured as a vertically inverted upper half.

24. The core as described in claim 17 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3,

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that salient pole tips of said core are disposed with an equal angular pitch, and salient poles on a half side of said upper core half have an opening angle equal to an electrical angleγ (145°to 160°) – one-quarter the cycle of the basic cogging torque $((\gamma/m-90/k)^\circ$in mechanical angle, where k is the least common multiple of 2m and 3n) and salient poles on the other half side have an opening angle equal to the electrical angle γ (145°to 160°) + one-quarter the cycle of the basic cogging torque $((\gamma/m+90/k)^\circ$in mechanical angle) and,

a lower half of said core is configured as a laterally inverted upper half.

25. The core as described in claim 17 wherein

a ratio of said number of magnetic poles to said number of slots is 4:3,

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that salient pole tips of said core are disposed with an equal angular pitch, and salient poles on a half side of said upper core half have an opening angle equal to an electrical angle δ (205°to 220°) – one-quarter the cycle of the basic cogging torque $((\delta/m-90/k)^\circ$in mechanical angle, where k is the least common multiple of 2m and 3n) and salient poles on the other half side have an opening angle equal to the electrical angleδ (205°to 220°) + one-

quarter the cycle of the basic cogging torque ((δ/m+90/k)°in mechanical angle) and,

a lower half of said core is configured as a laterally inverted upper half.

26. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that slots of said core are disposed with an equal angular pitch, and slots on a half side of the upper core half have an opening angle equal to an electrical angleα (80°to 95°) – one-quarter the cycle of the basic cogging torque ((α/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and slots on the other half side have an opening angle equal to the electrical angle α (80°to 95°) + one-quarter the cycle of the basic cogging torque ((α/m+90/k)°in mechanical angle), and

a lower half of said core is configured as a laterally inverted upper half.

27. The core as described in claim 17 wherein

said core has two different plane configurations in an axial direction,

an upper half of said core is configured so that slots of said core are disposed with an equal angular pitch, and slots on a half side of the upper core half have an opening angle equal to an electrical angleβ (20°to 35°) – one-quarter the cycle of the basic cogging torque ((β/m-90/k)°in mechanical angle, where k is the least common multiple of 2m and 3n) and slots on the other half side have an opening angle equal to the electrical angle β (20°to 35°) + one-quarter the cycle of the basic cogging torque ((β/m+90/k)°in mechanical angle), and

a lower half of said core is configured as a laterally inverted upper half.

28. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core,

wherein said core is made of upper, middle, and lower thirds and pole winding parts of said core are made narrower in the upper and lower thirds than the middle third.

29. The core as described in claim 28 wherein

in a case where a number of magnetic poles is 4m and a number of core slots is 3m (m is an integer),

core shapes of the upper and lower thirds are identical, and each of these thirds is configured so that salient pole tips are disposed at an equal angular pitch, and opening angles of said salient pole tips are set to an angle equal to an electrical angle γ (145°to 160°) – one-quarter the cycle of basic cogging torque $((\gamma/m-90/k)^\circ$ in mechanical angle, where k a the least common multiple of 2m and 3n), and

a core shape of the middle third is configured so that salient pole tips of said core are disposed at an equal angular pitch, and opening angles of said salient pole tips are set to an angle equal to the electrical angle γ (145°to 160°) + one-quarter the cycle of the basic cogging torque $((\gamma/m+90/k)^\circ$ in mechanical angle).

30. The core as described in claim 28 wherein

in a case where a number of magnetic poles is 4m and a number of core slots is 3m (m is an integer),

core shapes of the upper and lower thirds are identical, and each of these thirds is configured so that salient pole tips of said thirds are disposed at an equal angular pitch, and opening angles of said salient pole tips are set to an angle equal to an electrical angle δ (205°to 220°) – one-quarter the cycle of the basic cogging torque $((\delta/m-90/k)^\circ$ in mechanical angle, where k is a least common multiple of 2m and 3n), and

a core shape of the middle third is configured so that salient pole tips of said third are disposed with an equal angular pitch, and opening angles of said salient pole tips are set to an angle equal to the electrical angle δ (205°to 220°) + one-quarter the cycle of the basic cogging torque $((\delta/m+90/k)^\circ$ in mechanical angle).

31. The core as described in claim 17 wherein

said core is structured by combining a plurality of separated cores whose inner walls of a plurality of salient poles are joined by an annular part.

32. The core as described in claim 28 wherein

said core is structured by combining a plurality of separated cores whose inner

walls of a plurality of salient poles are joined by an annular part.

33. The core as described in claim 31 wherein

said separated cores are shaped identical.

34. The core as described in claim 32 wherein

said separated cores are shaped identical.

35. A core for use in a motor, said motor including N and S magnetic poles for generating a magnetic field to which said core is opposed, said core comprising:

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein a number of magnetic poles is 2m and a number of slots of said core is 3n (m and n are integers),

wherein said core is configured by combining j core shapes each having their slots displaced by an angle equal to one-2j-th (j is an integer equal to 3 or more) the cycle of basic cogging torque ((180/j·k) °in mechanical angle, where k is a least common multiple of 2m and 3n).

36. The core as described in claim 2 wherein

said core is structured by laminating thin plates of magnetic material.

37. The core as described in claim 15 wherein

said core is structured by laminating thin plates of magnetic material.

38. The core as described in claim 16 wherein

said core is structured by laminating thin plates of magnetic material.

39. The core as described in claim 17 wherein

said core is structured by laminating thin plates of magnetic material.

40.The core as described in claim 28 wherein

said core is structured by laminating thin plates of magnetic material.

41. The core as described in claim 35 wherein

said core is structured by laminating thin plates of magnetic material.

42. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other,

wherein a number of said magnetic poles is 2m and a number of slots of said core is 3n (m and n are integers), and

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees.

43. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other,

wherein a number of said magnetic poles is 2m and a number of slots of said core is 6n (m and n are integers),

a plurality of slots formed in said core; said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein said core is configured by combining two core shapes each having the slots displaced by an angle equal to one-quarter the cycle of basic cogging torque ((90/k)°in mechanical angle, where k is a least common multiple of 2m and 6n).

44. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other,

wherein a number of said magnetic poles is 2m and a number of slots of said core is 3n (m and n are integers),

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein said core is configured by combining three core shapes each having the slots displaced by an angle equal to one-sixth the cycle of basic cogging torque ((60/k)°in mechanical angle, where k is a least common multiple of 2m and 3n).

45. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other,

wherein a number of said magnetic poles is 2m and a number of slots of said core is 3n (m and n are integers, $m \geqq 4$),

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein said core is configured by combining P core shapes each having the slots displaced by an angle equal to one-2P-th the cycle of basic cogging torque ((180/n·k)°in mechanical angle, where k is a least common multiple of 2m and 3n).

46. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other,

wherein a number of said magnetic poles is 2m and a number of slots of said core is 3n (m and n are integers),

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein said core is configured by making coplanar and axial combinations of two core shapes each having the slots displaced by an angle equal to one-quarter the cycle of basic cogging torque ((90/k)°in mechanical angle, where k is a least common multiple of 2m and 3n).

47. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other, and

wherein said core is made of upper, middle, and lower thirds, and pole winding parts of said core are made narrower in the upper and lower thirds than the middle third.

48. A motor including:

(a) magnetic field generating means having N and S magnetic poles for generating a magnetic field; and

(b) a core made of magnetic material and opposed to said magnetic field generating means;

wherein one of said magnetic field generating means and said core rotates with respect to the other,

wherein in a case where a number of said magnetic poles is 2m and a number of slots of said core is 3n (m and n are integers),

a plurality of slots formed in said core, said slots have an electrical angle which is one of:

a) between 80 degrees and 95 degrees; and

b) between 20 degrees and 35 degrees

wherein said core is configured by combining j core shapes each

having the slots displaced by an angle equal to one-2j-th (j is an integer equal to 3 or more) the cycle of basic cogging torque ((180/j·k)°in mechanical angle, where k is a least common multiple of 2m and 3n).

49. The motor described in claim 44 wherein

polarization is performed at a skew angle of (200/k)°or less in central angle (k is the least common multiple of 2m and 3n).

50. The motor described in claim 45 wherein

polarization is performed at a skew angle of (200/k)°or less in central angle (k is the least common multiple of 2m and 3n).

51. The motor described in claim 46 wherein

polarization is performed at a skew angle of (200/k)°or less in central angle (k is the least common multiple of 2m and 3n).

52. The motor described in claim 47 wherein

in a case where said magnetic field generating means is a magnet, and a number of magnet poles is 2m and a number of core slots is 3n (m and n are integers), polarization is performed at a skew angle of (200/k)°or less in central angle (k is a least common multiple of 2m and 3n).

53. The motor described in claim 48 wherein

polarization is performed at a skew angle of (200/k)°or less in central angle (k is the least common multiple of 2m and 3n).

54. The motor described in claim 49 wherein

polarization is performed at a skew angle ranging from (80/k)°to (100/k)° in said central angle.

55. The motor described in claim 50 wherein

polarization is performed at a skew angle ranging from (80/k)°to (100/k)° in said central angle.

56. The motor described in claim 51 wherein

polarization is performed at a skew angle ranging from (80/k)°to (100/k)° in said central angle.

57. The motor described in claim 52 wherein

polarization is performed at a skew angle ranging from (80/k)°to (100/k)° in said central angle.

58. The motor described in claim 53 wherein

polarization is performed at a skew angle ranging from (80/k)°to (100/k)° in said central angle.